

# High Performance Acousto-Optic Arrays based on Fiber Bragg Gratings for Measuring Launch Acoustics, Phase I

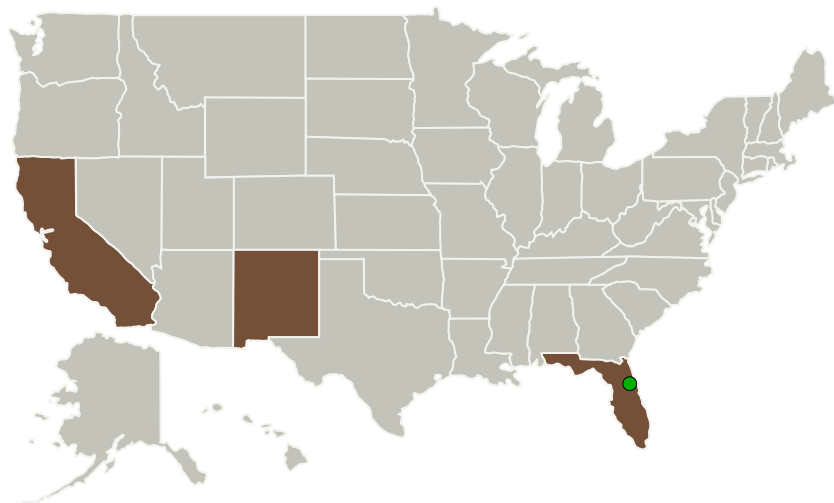
Completed Technology Project (2012 - 2013)



## Project Introduction

Intelligent Fiber Optic Systems Corporation (IFOS) proposes to prove the feasibility of innovations in acousto-optic sensor development for measurement of launch acoustics on space vehicle and ground structures. The proposed sensor platform provides an ultra-light-weight, ultra-high-speed, multi-channel, optical fiber sensor array system for acoustics measurements. The project goals are to design an ultra-high-speed/high resolution, small footprint fiber Bragg grating (FBG) acousto-optic sensor array plus the interrogator, construct a system model, test platform and develop signal processing algorithms to identify and measure acoustic signals in the presence of a quasi-static background strain field. The system model will demonstrate proof-of-principle and the test results will provide proof-of-functionality of the proposed sensor system for measurement of vehicle and ground effects of launch acoustics including using the advanced signal processing algorithms. IFOS and its collaborators in this project will develop a Phase 2 strategy plan that includes development and integration strategy, potential demonstration opportunities, program schedule, and estimated costs.

## Primary U.S. Work Locations and Key Partners



High Performance Acousto-Optic Arrays based on Fiber Bragg Gratings for Measuring Launch Acoustics, Phase I

## Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3
Target Destinations	3

# High Performance Acousto-Optic Arrays based on Fiber Bragg Gratings for Measuring Launch Acoustics, Phase I

Completed Technology Project (2012 - 2013)



Organizations Performing Work	Role	Type	Location
Intelligent Fiber Optic Systems Corporation	Lead Organization	Industry	Santa Clara, California
● Kennedy Space Center(KSC)	Supporting Organization	NASA Center	Kennedy Space Center, Florida
New Mexico Institute of Mining and Technology	Supporting Organization	Academia	Socorro, New Mexico

## Primary U.S. Work Locations

California	Florida
New Mexico	

## Project Transitions

▶ **February 2012:** Project Start

✓ **February 2013:** Closed out

### Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/138205>)

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Organization:

Intelligent Fiber Optic Systems Corporation

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

### Program Director:

Jason L Kessler

### Program Manager:

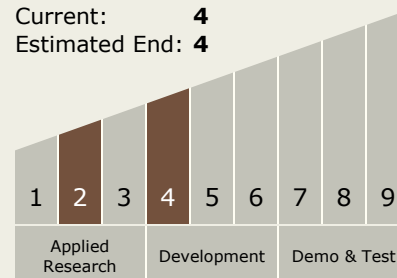
Carlos Torrez

### Principal Investigator:

Richard J Black

## Technology Maturity (TRL)

Start: 2  
Current: 4  
Estimated End: 4



# High Performance Acousto-Optic Arrays based on Fiber Bragg Gratings for Measuring Launch Acoustics, Phase I

Completed Technology Project (2012 - 2013)



## Technology Areas

### Primary:

- TX08 Sensors and Instruments
  - └ TX08.3 In-Situ Instruments and Sensors
    - └ TX08.3.5 Electromagnetic Wave Based Sensors

## Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System